Format No: CP/TF/01

# TEST REPORT OF FINE AGGREGATE

**Lab ID** : **CP-2018-03-21-01** **Date: 24-03-18**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Improvements to Roads and drains at Ashraya layout cross roads in ward No.11 Kuvempunagara.

**Agency** : Executive Engineer, KRIDL, #280, 59th Cross road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560 010.

**Customer's Reference** : BBMP/EE/BTP/WO/119/2017-18

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 21-03-18

**Sample ID No** : 2018-03-21-01 /03

**Sample Type** : Fine Aggregate

**Reference to BIS codes** : IS 383 : 2016 (Specification for Coarse and fine Aggregates)
IS: 2386 :1963(Part - 1, 3) RA2012
IS 2386 Part 1: Particle Size and Shape
IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption

**Date of test** : 21-03-18

**Total weight taken** : 1000 grams

| Sl.no | Sieve Size | Weight Retained (gms) | Cumulative Weight Retained (gms) | % Cumulative Weight Retained | % Passing | Requirement as per IS 383:2016 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Grading Zone I | Grading Zone II | Grading Zone III | Grading Zone IV |
| 1 | 10 mm | 0 | 0 | 0.0 | 100.0 | 100 | 100 | 100 | 100 |
| 2 | 4.75 mm | 42 | 42 | 4.2 | 95.8 | 90-100 | 90-100 | 90-100 | 95-100 |
| 3 | 2.36 mm | 162 | 204 | 20.4 | 79.6 | 60-95 | 75-100 | 85-100 | 95-100 |
| 4 | 1.18 mm | 234 | 438 | 43.8 | 56.2 | 30-70 | 55-90 | 75-100 | 90-100 |
| 5 | 600 micron | 197 | 635 | 63.5 | 36.5 | 15-34 | 35-59 | 60-79 | 80-100 |
| 6 | 300 micron | 127 | 762 | 76.2 | 23.8 | 5-20 | 8-30 | 12-40 | 15-50 |
| 7 | 150 micron | 158 | 920 | 92.0 | 8.0 | 0-10 | 0-10 | 0-10 | 0-15 |
| 8 | Pan | 80 | 1000 | 100.0 | 0.0 | --- | --- | --- | --- |

**Result :The tested Sample Conforms to Grading Zone II**



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# TEST REPORT OF FINE AGGREGATE

**Lab ID** : **CP-2018-03-21-01** **Date: 24-03-18**

**Sample ID No** : 2018-03-21-01 /03

## PHYSICAL PROPERTIES

| Sl.no | Tests | Result | Requirements as per IS 383:2016 |
|---|---|---|---|
| 1 | Water Absorption(%) | 1.48 | – |
| 2 | Specific Gravity | 2.53 | – |
| 3 | Material finer than 75 micron(%) | 7.1 | Uncrushed fine Aggregate Max 3%, Crushed Fine aggregate Max 15%, Mixed Fine aggregate Max 12%, Manufactured Fine aggregate Max 10% |

**Note:**
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**Quality Manager**

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# TEST RESULTS OF STEEL

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2018-03-21-01** **Date: 23-03-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Address** | : | Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Improvements to Roads and drains at Ashraya layout cross roads in ward No.11 Kuvempunagara. |
| **Agency** | : | Executive Engineer, KRIDL, #280, 59th Cross road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560 010. |
| **Customer's Reference** | : | BBMP/EE/BTP/WO/119/2017-18 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 21-03-18 |
| **Sample ID No** | : | 2018-03-21-01 /05 |
| **Sample Type** | : | INDUS |
| **Reference to BIS codes** | : | IS 1786-2008, IS:1608-2005(RA 2011), IS 1599-2012. |
| **Date of test:** | : | 22-03-18 |

| Sl.No | Identification of sample | Grade of the sample | Diameter of the steel bar | Weight of the sample | Yield stress | Tensile strength | Elongation | Bend test | Rebend test |
|---|---|---|---|---|---|---|---|---|---|
| | | | (mm) | (kg/m) | (N/mm2) | (N/mm2) | (%) | | |
| 1 | INDUS | Fe500 | 8 | 0.393 | 527 | 652 | 20.0% | Satisfactory | Satisfactory |
| 2 | INDUS | Fe500 | 10 | 0.612 | 542 | 661 | 20.0% | Satisfactory | Satisfactory |
| 3 | INDUS | Fe500 | 12 | 0.883 | 568 | 672 | 20.0% | Satisfactory | Satisfactory |

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# TEST REPORT OF PRECAST COVER SLAB

**Lab ID** : **CP-2018-03-21-01** **Date: 26-03-18**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Improvements to Roads and drains at Ashraya layout cross roads in ward No.11 Kuvempunagara.

**Agency** : Executive Engineer, KRIDL, #280, 59th Cross road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560 010.

**Customer's Reference** : BBMP/EE/BTP/WO/119/2017-18

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 21-03-18

**Sample ID No** : 2018-03-21-01 /06

**Sample Type /Size** : Precast Cover Slab

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete

**Date of test** : 22/03/2018

| Sl. No. | Identification Mark | Diameter of the core | Height of the core | Weight of the core | Area | Failure Load | Core Compressive strength | Corrected Cylinder Compressive strength | Equivalent Cube Compressive strength |
|---|---|---|---|---|---|---|---|---|---|
| | | (mm) | (mm) | (kg) | (Sq.mm) | (KN) | ($N/mm^2$) | ($N/mm^2$) | ($N/mm^2$) |
| 1 | Cover Slab-1 | 75.52 | 100.51 | 1.345 | 4478 | 92.4 | 20.6 | 19.2 | 24.0 |
| 2 | Cover Slab-2 | 75.48 | 100.49 | 1.389 | 4474 | 87.1 | 19.5 | 18.1 | 22.6 |
| 3 | Cover Slab-3 | 75.49 | 100.48 | 1.365 | 4475 | 89.6 | 20.0 | 18.6 | 23.3 |

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# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2018-03-26-01** **Date: 31/03/2018**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Improvements to Roads and drains at Ashraya layout cross roads in ward No.11 Kuvempunagara.

**Agency** : Executive Engineer, KRIDL, #280, 59th Cross road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560 010.

**Customer's Reference** : BBMP/EE/BTP/WO/119/2017-18

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 26-03-18

**Sample ID No** : 2018-03-26-01 /01

**Customer ID** : Drain Concrete

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 7 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 31/03/2018

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Drain Concrete | M20 | 24/03/2018 | 31/03/2018 | 149.85 X 151.44 X 149.88 | 22693 | 8.214 | 390.3 | 17.2 | 17.5 |
| 2 | Drain Concrete | M20 | 24/03/2018 | 31/03/2018 | 151.66 X 150.02 X 150.64 | 22752 | 8.304 | 411.8 | 18.1 | |
| 3 | Drain Concrete | M20 | 24/03/2018 | 31/03/2018 | 150.47 X 149.61 X 150.66 | 22512 | 8.142 | 385.0 | 17.1 | |

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# TEST REPORT OF CEMENT CONCRETE CUBES

**Date: 21/04/2018**

**Lab ID** : **CP-2018-03-26-01**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Improvements to Roads and drains at Ashraya layout cross roads in ward No.11 Kuvempunagara.

**Agency** : Executive Engineer, KRIDL, #280, 59th Cross road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560 010.

**Customer's Reference** : BBMP/EE/BTP/WO/119/2017-18

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 26-03-18

**Sample ID No** : 2018-03-26-01 /02

**Customer ID** : Drain Concrete

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 28 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 21/04/2018

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Drain Concrete | M20 | 24/03/2018 | 21/04/2018 | 149.87 X 150.12 X 151.46 | 22498 | 8.175 | 513.0 | 22.8 | 22.8 |
| 2 | Drain Concrete | M20 | 24/03/2018 | 21/04/2018 | 150.47 X 150.22 X 151.02 | 22604 | 8.164 | 517.6 | 22.9 | |
| 3 | Drain Concrete | M20 | 24/03/2018 | 21/04/2018 | 150.41 X 150.47 X 151.00 | 22632 | 8.179 | 513.8 | 22.7 | |

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# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2018-03-28-03** **Date: 02/04/2018**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub-Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Improvements to Roads and drains at Ashraya layout cross roads in ward No.11 Kuvempunagara.

**Agency** : Executive Engineer, KRIDL, #280, 59th Cross road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560 010.

**Customer's Reference** : BBMP/EE/BTP/WO/119/2017-18

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 28-03-18

**Sample ID No** : 2018-03-28-03 /01

**Customer ID** : Cement Concrete Pavement

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 7 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 02/04/2018

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Cement Concrete Pavement | M20 | 26/03/2018 | 02/04/2018 | 149.86 X 151.22 X 150.47 | 22662 | 8.175 | 392.0 | 17.3 | 17.4 |
| 2 | Cement Concrete Pavement | M20 | 26/03/2018 | 02/04/2018 | 150.66 X 150.58 X 150.66 | 22686 | 8.145 | 399.3 | 17.6 | |
| 3 | Cement Concrete Pavement | M20 | 26/03/2018 | 02/04/2018 | 150.47 X 150.51 X 150.75 | 22647 | 8.165 | 394.1 | 17.4 | |

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# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2018-03-28-03**

**Date: 23/04/2018**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Improvements to Roads and drains at Ashraya layout cross roads in ward No.11 Kuvempunagara.

**Agency** : Executive Engineer, KRIDL, #280, 59th Cross road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560 010.

**Customer's Reference** : BBMP/EE/BTP/WO/119/2017-18

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 28-03-18

**Sample ID No** : 2018-03-28-03 /02

**Customer ID** : Cement Concrete Pavement

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 28 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 23/04/2018

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Cement Concrete Pavement | M20 | 26/03/2018 | 23/04/2018 | 151.02 X 150.85 X 151.47 | 22781 | 8.174 | 539.9 | 23.7 | 23.7 |
| 2 | Cement Concrete Pavement | M20 | 26/03/2018 | 23/04/2018 | 150.69 X 150.55 X 150.47 | 22686 | 8.105 | 533.1 | 23.5 | |
| 3 | Cement Concrete Pavement | M20 | 26/03/2018 | 23/04/2018 | 150.98 X 150.54 X 150.42 | 22729 | 8.058 | 543.2 | 23.9 | |

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# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2018-03-28-03** **Date: 02/04/2018**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Improvements to Roads and drains at Ashraya layout cross roads in ward No.11 Kuvempunagara.

**Agency** : Executive Engineer, KRIDL, #280, 59th Cross road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560 010.

**Customer's Reference** : BBMP/EE/BTP/WO/119/2017-18

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 28-03-18

**Sample ID No** : 2018-03-28-03 /03

**Customer ID** : Cement Concrete Pavement

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 7 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 02/04/2018

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Cement Concrete Pavement | M20 | 26/03/2018 | 02/04/2018 | 149.86 X 150.33 X 151.47 | 22528 | 8.174 | 412.3 | 18.3 | 17.7 |
| 2 | Cement Concrete Pavement | M20 | 26/03/2018 | 02/04/2018 | 150.28 X 150.66 X 150.47 | 22641 | 8.167 | 389.4 | 17.2 | |
| 3 | Cement Concrete Pavement | M20 | 26/03/2018 | 02/04/2018 | 150.42 X 150.67 X 150.18 | 22664 | 8.198 | 396.6 | 17.5 | |

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# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2018-03-28-03** **Date: 23/04/2018**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Improvements to Roads and drains at Ashraya layout cross roads in ward No.11 Kuvempunagara.

**Agency** : Executive Engineer, KRIDL, #280, 59th Cross road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560 010.

**Customer's Reference** : BBMP/EE/BTP/WO/119/2017-18

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 28-03-18

**Sample ID No** : 2018-03-28-03 /04

**Customer ID** : Cement Concrete Pavement

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 28 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 23/04/2018

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Cement Concrete Pavement | M20 | 26/03/2018 | 23/04/2018 | 149.63 X 150.47 X 150.66 | 22515 | 8.314 | 529.1 | 23.5 | 23.4 |
| 2 | Cement Concrete Pavement | M20 | 26/03/2018 | 23/04/2018 | 150.49 X 149.45 X 151.24 | 22491 | 8.146 | 533.0 | 23.7 | |
| 3 | Cement Concrete Pavement | M20 | 26/03/2018 | 23/04/2018 | 150.44 X 149.85 X 149.63 | 22543 | 8.175 | 516.2 | 22.9 | |

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# TEST RESULTS OF GRADATION FOR GSB
## (IS 2386:(Part 1) 1963 (RA2011)

**Lab ID** : **CP-2018-03-21-01** **Date: 23-03-18**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Improvements to Roads and drains at Ashraya layout cross roads in ward No.11 Kuvempunagara.

**Agency** : Executive Engineer, KRIDL, #280, 59th Cross road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/119/2017-18

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 21-03-18

**Sample ID No** : 2018-03-21-01/01

**Type of Mix** : GSB (Granular Sub Base)

**Date of test** : 21-03-18

**Oven Dry Weight** : 10000 Grams

| IS Sieve Size(mm) | Weight Retained (gm) | Cumulative Weight Retained (gm) | % Cumulative Weight Retained | % Passing | Spec. Limit Vide Table 400.1 MORTH Specification |
|---|---|---|---|---|---|
| 75 | 0 | 0 | 0.0 | 100.0 | 100 |
| 53 | 725 | 725 | 7.3 | 92.8 | 80-100 |
| 26.5 | 1785 | 2510 | 25.1 | 74.9 | 55-90 |
| 9.5 | 1305 | 3815 | 38.2 | 61.9 | 35-65 |
| 4.75 | 1500 | 5315 | 53.2 | 46.9 | 25-55 |
| 2.36 | 1801 | 7116 | 71.2 | 28.8 | 20-40 |
| 0.425 | 1765 | 8881 | 88.8 | 11.2 | 10-25 |
| 0.075 | 724 | 9605 | 96.1 | 4.0 | 0-5 |

**TESTS ON FILLER SCREEN MATERIALS**

| Sl no | Particulars | Test results | Spec.Limit Vide Table 400.2 MORTH Specification |
|---|---|---|---|
| 1 | Liquid Limit, % | 22.50% | Maximum 25 |
| 2 | Plasticity index, % | Non plastic | Maximum 6 |

**Note:-**

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## TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2018-03-21-01** **Date: 24-03-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Address** | : | Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Improvements to Roads and drains at Ashraya layout cross roads in ward No.11 Kuvempunagara. |
| **Agency** | : | Executive Engineer, KRIDL, #280, 59th Cross road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560 010. |
| **Customer's Reference** | : | BBMP/EE/BTP/WO/119/2017-18 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 21-03-18 |
| **Sample ID No** | : | 2018-03-21-01 /01 |
| **Sample Type** | : | ACC 53grade |
| **Reference to BIS codes** | : | IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification ,<br>IS 4031 (Part 1,2 3,4,5, 6,11):1988<br>IS 4031 Part 1 DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4<br>IS 4031 Part 2, Determination of Fineness by Blaine Air Permeability Method, Clause 5<br>IS 4031 Part 3, Determination of Soundness, Clause 5,Clause 6<br>IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5<br>IS 4031 Part 5, Determination of Initial & Final Setting Time, Clause 5<br>IS 4031 Part 11,DETERMINATION OF DENSITY , Clause 6 |
| **Date of test** | : | 22-03-18 |
| **Environmental Conditions during test** | : | Temperature: 26°C<br>Humidity: 72% |

| Sl.No. | Physical properties | Results | Requirement as per IS 12269: 2013 |
|---|---|---|---|
| 1 | Fineness by dry sieving (%) | 1.89 | – |
| 2 | Finess by Air permeablity method ($m^2$/kg,Min) | 293.4 | 225$m^2$/kg, Min |
| 3 | Density (gm/cc) | 3.14 | – |
| 4 | Standard Consistency (%) | 29.5% | Not specified |
| 5 | Initial Setting time | 155 minutes | Not less than 30 minutes |
| 6 | Final Setting time | 265 minutes | Not more than 600 minutes |
| 7 | Soundness (Le Chatelier's Method) | 1.5mm | Not more than 10 mm |

**Note:**

The results pertain to the samples received and tested.

All information furnished by Customer/Representative

Any correction in the report will make this report invalid

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Samples will be disposed after 90 days from the date of issue of test certificate

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

CIVIL Pro Sig..... Date..... BANGALORE


****End of Report****

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HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL | GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

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## TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2018-03-21-01** **Date: 19-04-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Address** | : | Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Improvements to Roads and drains at Ashraya layout cross roads in ward No.11 Kuvempunagara. |
| **Agency** | : | Executive Engineer, KRIDL, #280, 59th Cross road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560 010. |
| **Customer's Reference** | : | BBMP/EE/BTP/WO/119/2017-18 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 21-03-18 |
| **Sample ID No** | : | 2018-03-21-01 /01 |
| **Sample Type** | : | ACC 53grade |
| **Reference to BIS codes** | : | IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification ,<br>IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5<br>IS 4031 Part 6, Determination of Compressive Strength, Clause 6 |
| **Date of test** | : | 22-03-18 |
| **Environmental Conditions during test** | : | Temperature: 26°C<br>Humidity: 72% |

**Compressive Strength**

| Sl.No. | Physical properties | Results | Requirement as per IS 12269: 2013 |
|---|---|---|---|
| 1 | 3 Days | 28.5N/mm$^2$ | Not less than 27 N/mm$^2$ |
| 2 | 7 Days | 38.0N/mm$^2$ | Not less than 37 N/mm$^2$ |
| 3 | 28 Days | 55.5N/mm$^2$ | Not less than 53 N/mm$^2$ |

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## TEST REPORT ON COARSE AGGREGATES

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2018-03-21-01** **Date: 24-03-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Address** | : | Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Improvements to Roads and drains at Ashraya layout cross roads in ward No.11 Kuvempunagara. |
| **Agency** | : | Executive Engineer, KRIDL, #280, 59th Cross road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560 010. |
| **Customer's Reference** | : | BBMP/EE/BTP/WO/119/2017-18 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample condition** | : | Satisfactory |
| **Date of Receipt** | : | 21-03-18 |
| **Sample ID No** | : | 2018-03-21-01 /02(a) |
| **Sample Type** | : | 40mm down size coarse aggregate |
| **Reference to BIS codes** | : | IS: 383:2016 (Specification for Coarse and fine Aggregates )<br>IS: 2386 :1963(Part - 1,3,4) RA2011<br>IS 2386 Part 1: Particle Size and Shape<br>IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption<br>IS 2386 Part 4: Mechanical Properties |
| **Date of test** | : | 21-03-18 |

**SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 40MM DOWN COARSE AGGREGATE:**

**Total weight taken : 15000 grams**

| Sample No. | Sieve No. | Weight Retained in gms | Cumulative Weight Retained in gms | % Cumulative Weight Retained | % Passing | Required as per IS 383:2016 |
|---|---|---|---|---|---|---|
| 1 | 80 mm | 0 | 0 | 0.0 | 100 | 100 |
| 2 | 40 mm | 214 | 214 | 1.4 | 98.6 | 90-100 |
| 3 | 20 mm | 7254 | 7468 | 49.8 | 50.2 | 30-70 |
| 4 | 10 mm | 4442 | 11910 | 79.4 | 20.6 | 10-35 |
| 5 | 4.75 mm | 2685 | 14595 | 97.3 | 2.7 | 0-5 |
| 6 | Pan | 405 | 15000 | 100.0 | 0 | --- |



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## TEST REPORT ON COARSE AGGREGATES

**Lab ID** : **CP-2018-03-21-01** **Date: 24-03-18**

**Sample ID No** : 2018-03-21-01 /02(a)

**PHYSICAL PROPERTIES**

| Sl.no | Tests | Result | Requirements as per IS:383-2016 |
|---|---|---|---|
| 1 | Flakiness Index(%) | **11.8** | Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate |
| 2 | Elongation Index(%) | **10.1** | |
| 3 | Specific Gravity | **2.62** | _ |
| 4 | Bulk Density(Loose) (Kg/l) | **1.47** | _ |
| 5 | Bulk Density(Compacted) (Kg/l) | **1.52** | _ |
| 6 | Water Absorption(%) | **0.17** | _ |

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## TEST REPORT ON COARSE AGGREGATES

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2018-03-21-01** **Date: 24-03-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Address** | : | Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Improvements to Roads and drains at Ashraya layout cross roads in ward No.11 Kuvempunagara. |
| **Agency** | : | Executive Engineer, KRIDL, #280, 59th Cross road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560 010. |
| **Customer Reference** | : | BBMP/EE/BTP/WO/119/2017-18 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 21-03-18 |
| **Sample ID No** | : | 2018-03-21-01 /02(b) |
| **Sample Type/ Size** | : | 20mm down size coarse aggregate |
| **Reference to BIS codes** | : | IS: 383:2016 (Specification for Coarse and fine Aggregates )<br>IS: 2386 :1963(Part - 1,3,4) RA2011<br>IS 2386 Part 1: Particle Size and Shape<br>IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption<br>IS 2386 Part 4: Mechanical Properties |
| **Date of test** | : | 21-03-18 |

**SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 20MM DOWN COARSE AGGREGATE:**

**Total weight taken : 5000 grams**

| Sample No. | Sieve No. | Weight Retained in gms | Cumulative Weight Retained in gms | % Cumulative Weight Retained | % Passing | Required as per IS 383:2016 |
|---|---|---|---|---|---|---|
| 1 | 40 mm | 0 | 0 | 0 | 100 | 100 |
| 2 | 20 mm | 198 | 198 | 4.0 | 96.0 | 90-100 |
| 3 | 10 mm | 2245 | 2443 | 48.9 | 51.1 | 25-55 |
| 4 | 4.75 mm | 2386 | 4829 | 96.6 | 3.4 | 0-10 |
| 5 | Pan | 171 | 5000 | 100 | 0 | – |



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## TEST REPORT ON COARSE AGGREGATES

**Lab ID** : **CP-2018-03-21-01** **Date: 24-03-18**

**Sample ID No** : 2018-03-21-01 /02(b)

### PHYSICAL PROPERTIES

| Sl.no | Tests | Result | Requirements as per IS:383-2016 |
|---|---|---|---|
| 1 | Flakiness Index(%) | 11.8 | Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate |
| 2 | Elongation Index(%) | 12.4 | |
| 3 | Specific Gravity | 2.64 | – |
| 4 | Bulk Density(Loose) (Kg/l) | 1.49 | – |
| 5 | Bulk Density(Compacted) (Kg/l) | 1.55 | – |
| 6 | Water Absorption(%) | 0.21 | – |
| 7 | Aggregate crushing Value(%) | 23.8 | Max 30% for Aggregates to be used in concrete for wearing Surface, In case Aggregate Crushing Value Exceeds 30% then the test for ten percent fines should be conducted for Aggregates to be used in concrete other than for wearing Surface. |
| 8 | Aggregate Impact Value(%) | 22.7 | 30% for Aggregates to be used in concrete for wearing Surface, 45% for Aggregates to be used in concrete other than for wearing Surface. |

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Authorized Signature
**Quality Manager**

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*End of Report*

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